

Voice Synthesized Speaker and LED Revolving Light Instruction Manual



[TYPE : RFV]

Thank you for purchasing the Voice Synthesized Speaker and LED Revolving Light for you application. Please read these instructions carefully before installation, maintenance and repair. Store this manual in a safe place for future reference. If you have any questions regarding this product, please contact our PATLITE Sales Representatives.

Notice for Safe Operation

In order to prevent any damage to the user and other personnel or to assets, note the following:

■ The warning indications are divided into the following classes according to the degree of danger or damage incurred when the warning is not taken into consideration and the product is not correctly used.

 Warning	Indicates an imminently dangerous condition: failure to follow the instructions may lead to death or serious injury.
 Caution	Indicates a potentially dangerous condition: failure to follow the instructions may lead to slight injury or property damage.

PLEASE	Indicates something to observe before using this product. The disregard to this indication may lead to product malfunction or failure.
NOTE	Notice regarding supplementary information or convenient explanation is indicated.

1. To operate this product properly, observe the following:

Warning

- Be sure the power is disconnected before wiring or installing this product. Possibility of electric shock may occur.
- Do not disassemble or modify this product. Possibility of fire or electric shock may occur. If repair is needed, refer to [8. Before Requesting Repair]. For questions concerning our product or for when repair is necessary, refer to the end of this document for contacting your nearest PATLITE Sales Representative.
- Be careful not to miswire this product. Possible miswiring can cause product failure or fire.
- Be sure to stay within the operating voltage range. Possibility of fire, failure or malfunction may occur.
- Request the installation and wiring be accompanied by a professional contractor. Possibility of fire, electric shock or falling from high places may result.

Caution

- To protect the power supply and other internal circuitry, be sure to connect an external fuse.

Contrary to Warnings and Cautions indicated by this document, product failure due to mishandling, disassembly, modifications or natural disasters, etc. is not covered by any Warranty. Moreover, avoid any applications outside those indicated in this document.

PLEASE

- Do not use in an environment exposing strong radio waves or inductance noise. Noise may be induced from the speaker horn causing malfunction or failure.
- Do not use in an environment where corrosive gas is present. Possible cause of failure may occur.
- To prevent damage from static electricity, touch hands or other body parts to metals or an earth ground to discharge the body from static charge before handling static sensitive parts, such as the SD Card.
- Use the recommended torque when attaching parts for installation, etc.
- When this product is used for security purposes, it should be inspected daily. In case a malfunction should occur, it is recommended that you use this product together with other security products.
- Do not install this product in a location which exceeds the rated vibration specifications.
- Operate the product with the side cover closed. Water or dust entering the product may cause damage.

- Caution on copyright -

Work that was recorded or copied from music CDs or other media used in public places may infringe upon copyrights and law enforcement may be imposed. When using a work that was recorded or copied from music CDs or other media, be sure to obtain permission from the author. In addition, copyright of audio/music data distributed or sold by PATLITE Corporation belongs to PATLITE. It is strictly prohibited to copy/reprint whole or partial contents of audio/music data belonging to PATLITE Corporation, or to transfer/sell such material on computer networks etc., without permission of the rightful holder.

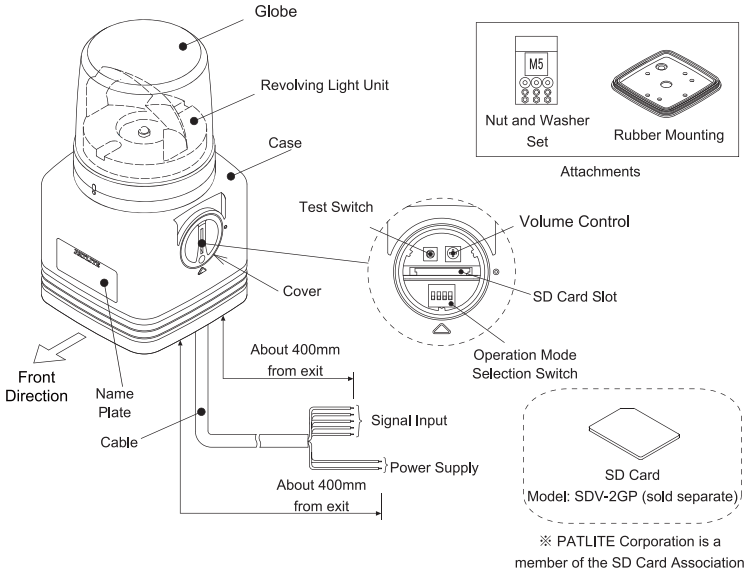
2. Model Number Configuration

RFV - **100** F - **R**

■ Rated Voltage
 24 : 24V DC
 100 : 100V AC
 200 : 220V AC

■ Color of revolving light
 R : Red
 Y : Yellow
 G : Green
 B : Blue

3. Part Names



4. Installation

Install the product in accordance to the procedure below.

- ① Attach the rubber mounting to the product as shown in “figure 1: Rubber Mounting Attachment”.
- ② Refer to Figure 2 below for the mounting dimensions and drill mounting holes on a mounting surface.
- ③ Insert the mounting feet of the product into the mounting holes and refer to Figure 3 for the assembly of the nuts and washers, then tighten the nuts with the recommended torque. (Recommended tightening torque: $0.7 \pm 0.1 \text{ N} \cdot \text{m}$)
- ④ Confirm that the product and mounting assemblies are attached correctly.

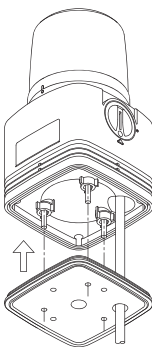


Figure 1:
Rubber Mounting Attachment

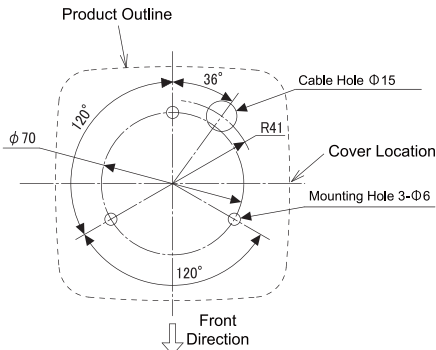


Figure 2:
Installation Dimensional Drawing
(Illustration depicts front direction)

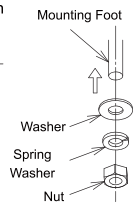


Figure 3:
Nut and Washer Assembly

⚠ Warning

- Be sure the power is disconnected before wiring or installing this product. Possibility of electric shock may occur.
- Request the installation and wiring be accompanied by a professional contractor. Possibility of fire, electric shock or falling from high places may result.

⚠ Caution

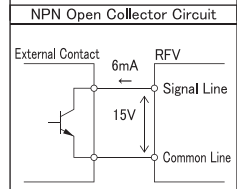
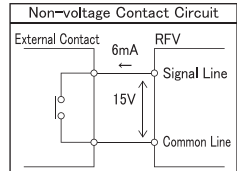
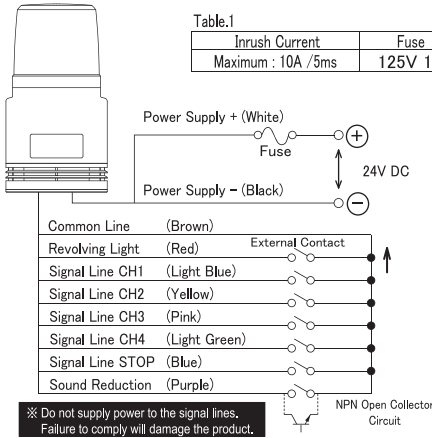
- Ensure the installation surface is sufficient enough to handle the weight of the product, and where vibration doesn't exceed the specifications. Failure to comply will lead to injury or damage to the product.
- Be sure to attach with all the materials included for installation and fasten them only with the recommended tightening torque. Failure to comply will lead to injury or damage to the product.

PLEASE

- Be sure to attach the rubber mounting in a manner in which there is no opening between the rubber mounting and the product. Failure to comply will weaken its resistance to water and dust.
- Install the product on a flat surface with no uneven surfaces. Failure to comply will weaken its resistance to water and dust.
- To prevent the product from falling in places where vibration may be generated, apply thread locking adhesive, etc., to the mounting angle screws and periodically check it.
- When installing in high places, choose a location which is accessible by a scaffold, ladder, etc., for repairs.
- When operating the product by controlling the power ON/OFF, be sure to include a switch by which the power supply can be easily cut near the main power for safety.
- Mount on a flat surface in an environment rated as Type 1 based on the NEMA designation.

5. Wiring

When connecting the signal line to an external contact, use a non-voltage dry contact circuit such as a relay, switch or NPN open collector circuit. Refer to the table on the lower right for the circuit diagram and contact capacity.



Contact Capacity	
Current Capacity	10mA or higher
Withstanding Voltage	20V DC or higher
Leakage Current	0.1mA or lower
On Voltage (V_{sat})	1V or lower

Warning

- Ensure the power has been disconnected before wiring. Possible electric shock may occur.
- Ensure the wiring is correct before connecting the power. Miswiring may result in failure or product damage.

Caution

- To protect the power supply and other internal circuit, be sure to connect an external fuse.

PLEASE

- Confirm that polarities and rated voltages are correct before connecting the power supply.
- To countermeasure against interference noise, make wiring as short as possible and use shielded wires whenever possible. In addition, separate any signal lines which pass along high voltage cables or is susceptible to receive induction noises. Interference may influence signal inputs and cause product malfunction.
- If a non-voltage contact, such as a relay or switch etc., is used for the power supply line, consider inrush current (Table.1) capacity when selecting the contact. If the capacity is insufficient, it will cause pitting or welding of the contacts, causing malfunction.

NOTE

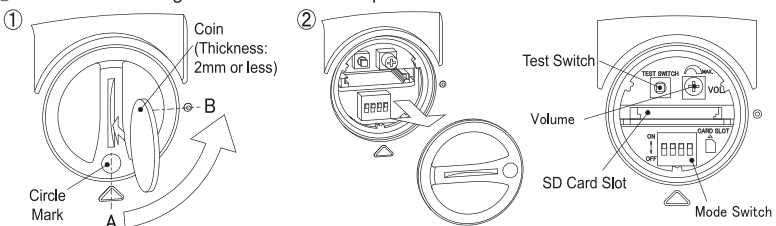
- If the power supply or signal lines are switched on simultaneously from multiple units, their playback and revolving lamp may not start at the same time.

6. How to Operate

6-1 Cover Access

Follow the procedure below to open or close the cover when performing tasks such as accessing the SD Card Slot, Mode Switch or adjusting the volume.

- ① Use something 2mm in thickness, such as a coin, to turn the circle mark on the cover to position "B".
- ② Pull the cover straight out to remove it. Repeat in the reverse order to close the cover.



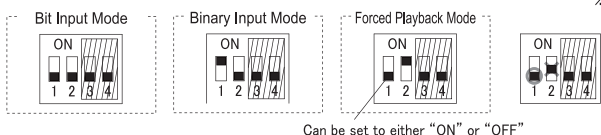
PLEASE

- Avoid the intrusion of foreign objects while the cover is removed.
- When replacing the cover, ensure the cover has been fully turned to the position "A" circle mark. Failure to comply will decrease the resistance to water and dust.

6-2 Playback Mode Selection

One of the following modes can be selected when changing the selection switch:

- Bit Input Mode: Channel (CH) input is set for the bit input mode. Refer to 6-6-1 for operation.
- Binary Input Mode: Channel (CH) input is set for the binary input mode. Refer to 6-6-2 for operation.
- Forced Playback Mode: CH1 is played when the power is turned on. It ignores any inputs other than volume adjustments.



※ Ensure the switches are in their full "ON" or "OFF" position. Failure to comply will cause operation in a mode not desired. The switches in the shaded area are unused.

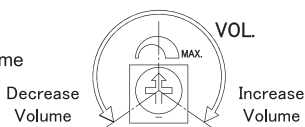
Can be set to either "ON" or "OFF"

Factory Settings: Bit Input Mode is set when messages of 4 or less are registered.

Binary Input Mode is set when messages of 5 or more are registered.

6-3 Adjusting the Volume

Volume can be adjusted using the volume control. The volume is adjustable by turning the knob with your fingers.



PLEASE

- Turn the volume control lightly, a torque over 0.5N·m can damage the volume control.

NOTE

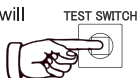
- As the sound increases, the possibility of distortion may also occur.
- Due to environmental conditions and tolerances, the volume may not be at zero sound level.

6-4 Test Switch

When the test switch is pressed down once with no SD card inserted, CH1 will playback and the revolving light operates.

When it is pressed down again, the playback and revolving light stop. Use the test switch when checking operation or volume adjustment.

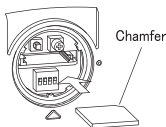
When the test switch is pressed down while an SD Card is inserted, data will load from the SD Card and rewriting of the message will commence. For further details, Refer to "6-5. Message Rewriting".



6-5 Message Rewriting

By using our PATLITE Playlist Editor (download from our homepage is possible without extra charge), an SD card (Model: SDV-2GP sold separately), and an MP3 sound editing tool, the message can be rewritten. The maximum playback time for this product is 63 seconds (at a rate of 64kbit/s, Fs=44.1kHz and internal memory size of 504Kb). Refer to the "Help" section of the corresponding software for the procedure to create the MP3 Data and storing it onto an SD Card. Message Rewriting Procedure:

- ① Remove the cover and turn on the power to the product.
 - ② Verify the signal input mode is set for either bit or binary input before inserting the SD card into the SD Card Slot where the rewritten data is stored.
- * Message rewriting is not possible in the "Forced Playback Mode" or while a message is being played back.
- ③ When the test switch is pressed down, a high-low beep will sound to indicate rewriting has begun.
 - ④ When the rewriting is complete, a short beep will sound and the SD card can be removed.
- * Rewriting should be completed within 45 seconds. If a long beep sound or no sound occurs at all, the rewriting is not successfully completed. Refer to Section "7. Before Requesting Repair".
- ⑤ Confirm the messages were successfully rewritten by checking the playback to each CH.



PLEASE

- Optional SDV-2GP type should be used for the SD card. Using other SD cards is not guaranteed for proper operation.
- When formatting an SD card, please use the FAT16 format.
- To prevent the possibility of damage to the product or SD card, please beware of the following.
 - When inserting the SD card in the card slot, be careful of the direction of the SD card.
 - Do not forcibly insert the SD card into the card slot.
 - Do not operate the product with the SD card inserted.
 - Avoid any foreign substances from entering the card slot.

6-6 Message Playback

Turn the product on and when the Signal Line to Common Line is short-circuited, a message will playback.

- **Revolving Light:** Operates when the common line is short-circuited to the Signal Rotation Line (Red).
- **CH1 - CH4:** Short-circuit the Signal Lines to the Common Line for 100ms or longer for a message to be played back. The Revolving Light operates while the message is being played. During message playback, it ignores all inputs except the "STOP" input. If no messages are stored, only the Revolving Light will operate when the channel input signal line is short-circuited.

*The CH playback is determined by the Signal Line Input Mode. See sections "6-6-1 Bit Input Mode" and "6-6-2 Binary Input Mode".

- **STOP:** When the "STOP" Signal Line (Blue) is short-circuited for 100ms or longer, the message being played and the revolving light are stopped.
- **Sound Reduction:** While Channel inputs 1 through 4 (CH1 - CH4) are being short-circuited, the sound pressure for playing the message can be reduced by 15dB. If a signal is held on while a message is repeatedly played back, the next message to be played will reduce in sound as long as the Sound Reduction Line is shorted to the Common Line.

6-6-1. Bit Input Mode

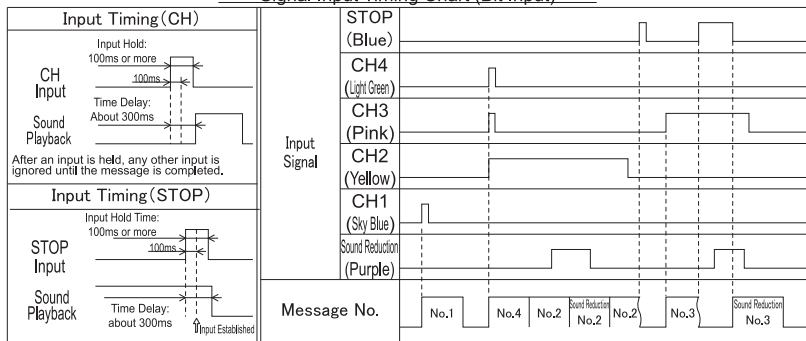
- A maximum of 4 messages can be played.
- When two or more signal wires are simultaneously short-circuited to the common line, the larger number of the channels is played back.

Input Priority:

STOP > CH4 > CH3 > CH2 > CH1

- When controlling this product by the power supply, start-up time takes at least 1 second.
- Refer to the timing chart below when controlling this product with the signal line.

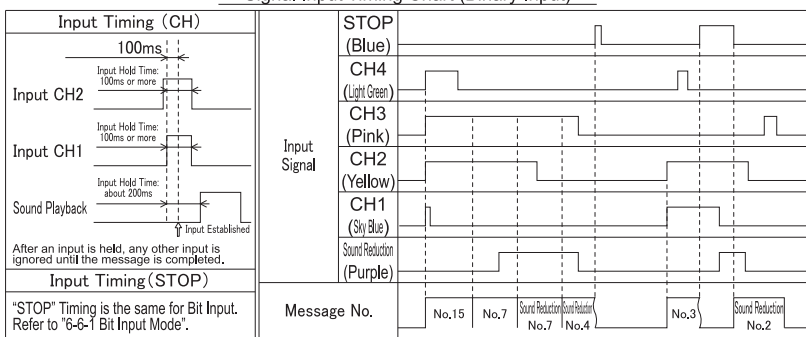
Signal Input Timing Chart (Bit Input)



6-6-2 Binary Input Mode

- A maximum of 15 messages can be played.
- A message corresponding to the binary input table listed below will play when a signal line among CH1 - CH4 are short-circuited to the common line.
- When controlling this product by the power supply, start-up time takes at least 1 second.
- Refer to the timing chart below when controlling this product with the signal line.

Signal Input Timing Chart (Binary Input)



Binary Input Mode Table

Playback CH	Signal Input Line				Playback CH	Signal Input Line				Playback CH	Signal Input Line			
	1	2	3	4		1	2	3	4		1	2	3	4
	(Sky Blue)	(Yellow)	(Pink)	(Light Green)		(Sky Blue)	(Yellow)	(Pink)	(Light Green)		(Sky Blue)	(Yellow)	(Pink)	(Light Green)
1	1	0	0	0	6	1	1	1	0	11	1	1	0	1
2	0	1	0	0	7	0	1	1	0	12	0	0	1	1
3	1	1	0	0	8	1	0	0	1	13	1	0	1	1
4	0	0	1	0	9	0	0	0	1	14	0	1	1	1
5	1	0	1	0	10	1	1	0	1	15	1	1	1	1

※ A "1" in the table refers to the short-circuit of the signal line to the common line.

7. Before Requesting Repair

Problem	Where to Check	What to do
No Sound, Rotating Light not operating	Is there power supplied?	Double check the wiring. (5. Wiring)
	Is the signal line to common line short-circuited correctly?	
	Is the STOP input on?	
Plays Different Channel	Is the volume turned down to minimum?	Adjust the volume. (6-4. Volume Adjustment)
	Is the signal line to common line short-circuited correctly?	Double check the wiring. (5. Wiring)
	Is the proper mode selected correctly?	Double check the Selection Switch. (6-2. Playback Mode Selection)
SD Card not being read	Is there power supplied?	Double check the wiring. (5. Wiring)
	Is the volume turned down to minimum? (Overwrite beep may not be heard)	Adjust the volume. (6-4. Volume Control)
	Is the SD card inserted correctly?	Double check the SD Card. (6-3. Message Rewriting)
	Is the SD card an option product from our company?	
	Is the playlist created on the SD card?	Double check the contents of the SD Card Playlist and Data Folder. (FV-Win or PatLite Playlist Editor Help File.)
Is the file name and contents of the playlist folder right?		
Is the data storage location correct?		

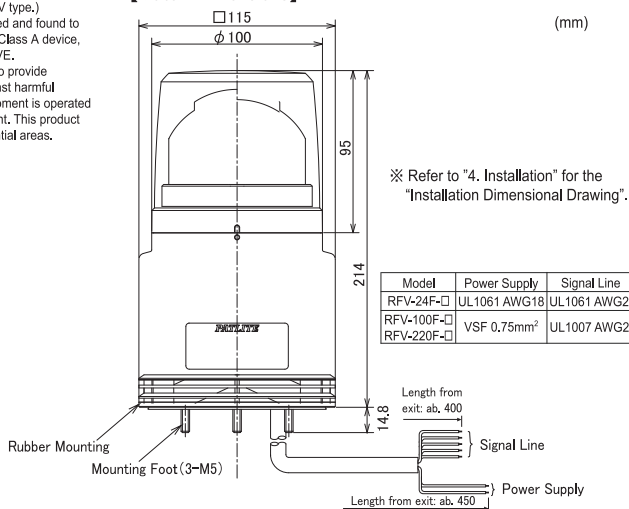
- Even after proper installation and handling, if the product does not operate correctly, contact your PATLITE Sales Representative.

8. Specifications

Model	RFV-24F-□	RFV-100F-□	RFV-220F-□
Rated Voltage	24V DC	100V AC	220V AC
Voltage Range	24V ± 10%	100V ± 10%	220V ± 10%
Maximum Power Consumption	18W	16W	
Sound Pressure Level	Max. 95dB: Placed on a 300mm ² base at a distance of 1 meter with a 1kHz sine wave and a 0dB input. Volume Adjustable ※ Sound level of message will vary with the surrounding environment.		
Sound Reduction Level	15dB Reduction (Measured with volume at maximum for a 1kHz sine wave)		
Audio File	MPEG1 Audio Layer III (MP3) Standard Bit Rate: 64kbit/s, Fs=44.1kHz (CD Quality)		
Maximum Playback Time	Total: 63.5 seconds (at standard bit rate of 64kbit/s and Fs=44.1kHz)		
Internal Memory Size	508kB (MP3 Data Total)		
Signal Input Mode	Bit Input / Binary Input / Exclusive Playback Mode (selectable)		
Signal Input Method	Short-circuit Input (Pulse width no less than 100msec)		
Start-up Delay	No less than 300msec (no less than 1 sec when power is controlled)		
Revolving Lamp Light Source	LED		
Luminosity	Red (R): 3000cd or more / Yellow (Y): 2500cd or more / Green (G): 2000cd or more / Blue (B) 600cd or more		
Flashes per Minute	115 ± 15 flashes per minute		
Operating Temperature Range	-10 to +50°C		
Relative Humidity	No more than 85% RH (No Condensation)		
Mounting Direction	Indoor: Upright and Inverted (Use in upright position only if exposed to water) Outdoor: Upright Direction Only		
Protection Rating	IP54 (When installed in upright position)		
Insulation Resistance	1MΩ or more (at 500V DC) between terminal and chassis		
Withstanding Voltage	500V AC for 1 minute	1000V AC for 1 minute	1500V AC for 1 minute
Vibration Resistance	(Between terminal and chassis)		
	45.0m/s ² (Upright Position)	19.6m/s ² (Upright Position)	
Mass	1.0kg ± 10%		1.2kg ± 10%

- This product conforms to EN standard and shows the CE Marking. (24V type.) This product has been tested and found to comply with the limits for a Class A device, pursuant to EMC DIRECTIVE. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This product must not be used in residential areas.

【Outer Dimensions】



- PATLITE Corporation disclaims all liability for any malfunction or damage occurring as a result of handling contrary to the instructions, cautions and warnings mentioned in this manual.
- Specifications may change without notice due to continual product improvement.

PATLITE Corporation G2G

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